

REPORT

DATE OF INFORMATION 1949

DATE DIST. 28 Nov 1949

NO. OF PAGES 7

SUPPLEMENT TO
REPORT NO.

SUPPLEMENT TO
REPORT NO.

THIS IS UNEVALUATED INFORMATION

SOVIET ANTARCTIC EXPEDITION, 1947 - 1948

G. M. Tauber

The second expedition of the First Soviet Antarctic Whaling Flotilla (AKF) into the Southern Hemisphere took place in 1947-1948. Its purpose was to fish for whales in Antarctic waters. A group of scientists accompanied the expedition to study hydrometeorological conditions in the equatorial-tropical zone and in the Antarctic and to carry on research in whale biology. The group was composed of: the author of this article; Yu. V. Makerov, engineer-oceanologist; A. A. Karpichnikov, Candidate in Biological Sciences; and N. E. Sal'nikov, scientist.

The base ship Slava and eight whaling ships made up the flotilla in 1947. The Slava displaces 30,000 tons, is about 150 meters long and up to 22 meters wide, has a speed of up to 12 knots, and is outfitted with modern navigation equipment. It has a large number of heating units within its hull and on its decks. These units create a considerable disturbance in the temperature and humidity around the ship.

The whaling ships are small and fast, displace from 600 to 700 tons, and are thoroughly seaworthy. They hunt for whales within a radius of 25 to 30 miles. Sometimes they can complete voyages of up to 1,500 miles on their own. They have a speed of up to 15 knots.

The AKF left Odessa on 22 October 1947 and returned there on 1 June 1948, completing a voyage which lasted 223.5 days or 7.4 months and which covered 25,350 miles.

On its way to the Antarctic, the flotilla passed through the Bosphorus and Dardanelles, into the Mediterranean, down the west coast of Africa, through the Gulf of Guinea, past the Cape of Good Hope, and south to its fishing place in the Antarctic.

• Figure 1 [appended] shows the route and timetable of the expedition.

- 2 -

CONFIDENTIAL

[illegible]

CONFIDENTIAL

CONFIDENTIAL

50X1-HUM

A breakdown as to how the expedition spent its time follows:

	<u>Days</u>
On the ocean (not counting stops in ports)	186
In the Southern Hemisphere	166
In the tropic zone	35.5
In the Antarctic (fishing)	115
South of 60th Parallel, south latitude	91
South of the polar circle	15
Along the islands of the Antarctic	12
Duration of the voyage	223.5

A. Meteorological Observations

Meteorological data was gathered in the Atlantic sector of the Antarctic with respect to factors influencing fishing conditions, such as air temperatures, water temperatures, wind velocities, and visibility. Table 1 sets forth this data.

Table 1. Meteorological Data

Meteorological Elements		Dec (8-31)	Jan	Feb	Mar	For the Season
Temperature (in degrees)						
Average	Air	-0.6	+0.3	-0.8	-3.9	-1.3
	Water	-0.9	+0.3	-0.6	-1.4	-1.7
Minimum	Air	-1.7	-1.8	-4.2	-12.6	-12.6
	Water	-1.7	-1.0	-1.7	-1.7	-1.7
Maximum	Air	+2.2	+1.2	+1.2	+0.8	+2.2
	Water	+0.8	+1.2	+1.1	+0.2	+1.2
Wind velocity (in "bally"*)						
Average		3.8	4.7	5.5	5.1	4.8
No of calm days (%)		2.5	1.3	0.7	1.3	1.4
No of days with 7-8 "ball" wind velocity		0	5	13	11	29
No of days with 9 and more "ball" wind velocity		0	1	6	4	11

- 2 -

CONFIDENTIAL

CONFIDENTIAL

CONFIDENTIAL
CONFIDENTIAL

50X1-HUM

Table 1 (contd)

Meteorological Elements	Dec (8-31)	Jan	Feb	Mar	For the Season
Visibility (% of days)					
Less than 2 miles	26	15	30	16	22
From 2 to 4 miles	16	6	15	10	12
More than 4 miles	58	79	55	74	66
No of days with snow	17	19	21	21	78
No of days with fog	9	7	10	6	32

* [In the Great Soviet Encyclopedia "bally" is explained as follows:

<u>"Bally"</u>	<u>Wind Velocity (m/sec)</u>
0	0.0-0.5
1	0.5-4
2	4-7
3	7-11
4	11-17
5	17-28
6	over 28]

The following observations can be made on Table 1:

1. The average temperature of the summer months south of 55 degrees south latitude is below zero, except in January, which is the warmest month and corresponds to July in the Northern Hemisphere.
2. The average temperature in March drops sharply. This is due to the fact that March is a fall month corresponding to September in the Northern Hemisphere and to the fact that during the second half of March the flotilla was in the high southern latitudes (see Figure 1). Here the temperature dropped as low as minus 13 degrees due to the southeasterly winds blowing from the continent.
3. The maximum temperature observation during the entire fishing trip was plus 2.2 degrees, made while the flotilla was in comparatively low latitudes (57 degrees south).
4. February was the stormiest month. Average wind velocity was 5.5 "bally." The number of days with more than 7 "ball" wind velocity was 19; 13 days had winds of 8 "ball" or greater velocity. The number of calm days in February was the lowest for the entire season (0.7 percent).

- 3 -

CONFIDENTIAL

CONFIDENTIAL

CONFIDENTIAL
CONFIDENTIAL

50X1-HUM

5. December was the quietest month. No winds of over 6 "ball" velocity were observed and the number of calm days was large (2.5 percent).

6. Average wind velocity for the season was 4.8 "bally," although 40, or 35 percent, of the 115 days spent in fishing, had winds of 7 or more "ball" velocity.

7. The season was one of poor visibility. Visibility on more than one third of all days was less than 4 miles. There was snow or fog on 110 of the 115 days. Good visibility was noted in the high latitudes, where the water was warmer than the air. Under the latter conditions, a difference in air temperature of 0.25 degree for every 10 meters up to 30 meters vertically above the surface of the water was noted with the use of a psychrometer. December and February were the months when visibility was poorest.

December and January were the best months for fishing. February and March were unfavorable due to snow and stormy weather.

The unstable weather in the area traversed by the flotilla is explained by the intense cyclonic activity in that part of the Antarctic.

Table 2. Cyclonic Activity Observed on the Expedition

Months	No of Cyclones				No of Days With Cyclonic Weather	Av Temp Dif (deg)
	South of Slava	North of Slava	Over Slava	Total		
Dec	5	2	-	7	11.0	2.0
Jan	1	3	-	4	7.5	0.5
Feb	5	-	2	7	16.0	2.5
Mer	5	3	-	8	13.5	3.0
Total	16	8	2	26	48.0	2.0

Table 2 shows that 26 cyclones passed either over the Slava or on either side of it. During the period, the weather on 48 days was cyclonic in nature. The center of most of the cyclones passed south of the Slava, although this occurred mainly when the Slava was in the vicinity of the 60th Parallel.

The average time interval between cyclones was 4.4 days. In cases of a cyclonic series, the parts of the series were one day apart. The most intense cyclonic activity was in February, the most unstable and stormiest month.

An interesting experience was the passing of a cyclone over the Slava on 20 February in the eastern part of the Weddell Sea. The wind increased to 11 "ball" intensity and barometric pressure dropped to 699 millimeters. This was the lowest pressure observed in the Antarctic. Prior to this reading 703 millimeters, noted in the Ross Sea, had been the lowest pressure.

In the Antarctic, there is not such a close relation between barometric pressure changes and storms as in the Northern Hemisphere. This observation agrees with findings of foreign expeditions in the Antarctic. Wind intensity rose to storm proportions with little or no change in pressure.

- 4 -

CONFIDENTIAL
CONFIDENTIAL

CONFIDENTIAL
CONFIDENTIAL

50X1-HUM

The tanker Iceif Stalin met the flotilla on 1 March.

B. Icebergs

Table 3. Height of Icebergs Measured

<u>Height (meters)</u>	<u>Frequency (percent)</u>
10 - 20	23
20 - 30	23
30 - 40	33
40 - 60	12
60 - 80	6
90 - 100	3

Table 3 shows the frequency with which icebergs of given heights were encountered on the voyage. It is apparent that 79 percent of the icebergs measured were up to 40 meters high and that icebergs of very great height were encountered very seldom.

Table 4. Sizes of Icebergs Encountered

<u>Sizes of Icebergs</u>	<u>Flat Top</u>		<u>Pyramidal</u>	
	<u>Height</u>	<u>Length</u>	<u>Height</u>	<u>Length</u>
	<u>(meters)</u>		<u>(meters)</u>	
Average	27.8	418	53.6	131
Maximum	51.2	1,271	94.5	176
Minimum	9.8	99	32.1	72

Table 4 shows the sizes of icebergs measured on the expedition according to flat-top and pyramidal types.

C. Water Temperatures

Between 60 - 65 degrees south, the temperature of the water on the surface was from zero to minus one degree during the period from December to February. In December, between 62 - 63 degrees south and 0 - 5 degrees east, it ranged from plus 0.9 degree to plus 1.1 degrees. In March, south of 65 degrees south, it was minus 1.5 degrees.

Temperature observations below the surface showed a cold zone 100 to 300 meters deep below the surface and below that a warm zone 1,000 to 1,500 meters deep with temperatures above zero. At 400 to 600 meters, they were as high as plus 2 degrees. Below this zone lies another cold zone with temperatures below zero.

D. Color of Sea Water

Table 5 shows the color properties of sea water in the Antarctic during the time of the expedition.

- 5 -

CONFIDENTIAL

CONFIDENTIAL

CONFIDENTIAL
CONFIDENTIAL

50X1-HUM

Figure 5. Color of Sea Water in the Antarctic

Color	Frequency (percent)				
	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>For the Season</u>
Dark blue	75	46	68	42	57
Azure	25	33	5	42	28
Greenish azure	0	21	27	16	16

In southern polar waters near the continent, where the flotilla fished during the second half of March, the color of the water was predominantly azure. Whales were found here in great numbers.

- 6 -

CONFIDENTIAL

CONFIDENTIAL

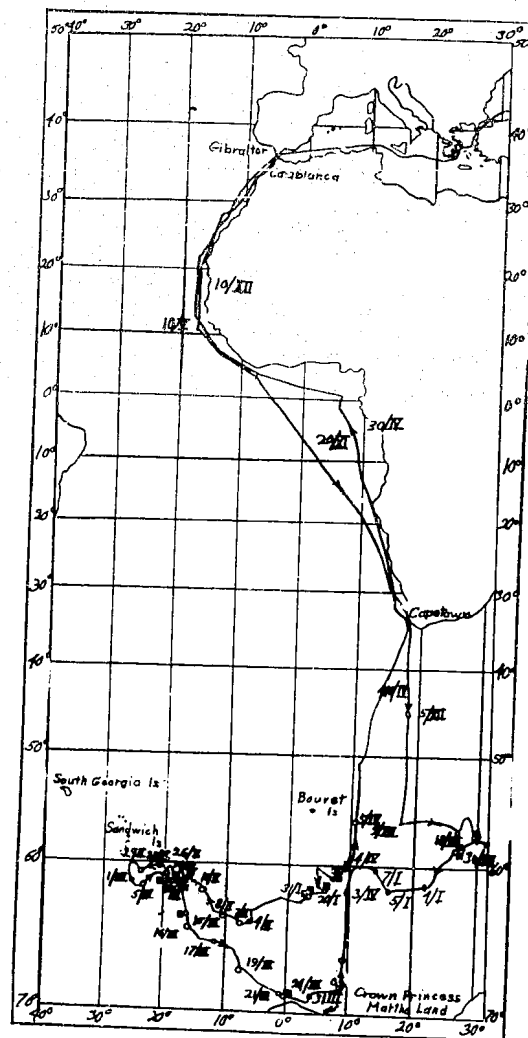
[illegible]

Figure 1. Route and Timetable of AKF Expedition

- E N D -

- 7 -

CONFIDENTIAL

CONFIDENTIAL